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## ART. I.—PHYSIOLOGY OF THE IRIS.

BY JAMES BOLTON, M. D., OF BALTIMORE.

In the absence of absolute demonstration of the true structure of the iris, we should pursue the method which has been frequently pursued in such cases with the most beneficial results to science, viz., to adopt the theory which will satisfactorily explain most of the phenomena. Let us then examine the principal phenomena observed with regard to the iris. It contracts on the admission of light through the pupil of a healthy eye, and expands when the light is obscured. Its action is involuntary, although a control of it by the will is possessed by some individuals, and some of the inferior animals. The proximate cause of its contraction is the sensation conveyed to it from the retina caused by the direct action of light on this nervous expansion. It is therefore incorrect to argue as some do, that the iris is a muscle, because it contracts on the application of its appropriate stimulus, and that stimulus is light, for the iris is insensible to the direct action of light. In order to ascertain how this contraction is brought about, we must first investigate the nervous connection between the retina and the iris. Does the impression made on the retina travel along the optic nerve to the brain, and through the connection between the third and fifth pairs with the ophthalmic ganglion to the iris? Certainly not; for the brain does not take cognisance of its motions. Brodie has seen the iris contract from the presence of light, and dilate from its absence, although the patient lay in a state of complete insensibility, and did not seem to be at all conscious of the impressions made on the retina.<sup>1</sup> Hennen has even seen these phenomena reversed, the iris expanding on the admission, and contracting on the exclusion of light.<sup>2</sup> The impression then evidently travels along the optic nerve to the brain, but in its passage affects the ophthalmic ganglion seated upon this nerve, and thence is transmitted along the ciliary nerves to the iris. For this purpose this ganglion has been placed very near the ball of the eye, and is very closely and firmly adherent to the optic nerve, almost surrounding it like a sheath. It is not necessary that the ganglion and nerve should have connecting filaments in order that nervous sensation might be transmitted directly from one to the other; mere apposition is sufficient, as has been proved by dividing nerves and placing their ends in contact. The ciliary nerves belong to the ganglionic system, except those branches which are derived from the first branch of the fifth pair. The connection of the third and fifth pairs of nerves with the ophthalmic ganglion should be considered merely as secondary, and by no means to possess the influence ascribed by some,—for instance, Walker, of Manchester, attributes the power of contracting to the fifth pair, and of dilating to the third pair.<sup>3</sup> As well might all the phenomena of the great sympathetic be attributed to its connection with the external motor and vidian nerves. This idea has arisen from the erroneous supposition that the union of these

<sup>1</sup> Cooper's Surg. Dict.  
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<sup>2</sup> Ibid.

<sup>3</sup> Dunglison's Human Physiology.

two nerves formed the sympathetic, while they are only two of the numerous connections between the ganglionic and cerebro-spinal systems. Besides, the ophthalmic ganglion is fairly connected with the rest of the ganglionic system by a branch which passes to it from the superior cervical or cavernous ganglion.<sup>1</sup>

We now come to the main question: by what means are the contraction and dilatation of the pupil immediately produced? The only modes of explanation adopted at present are the two following: the one that it is an erectile tissue, and the other that it is muscular and composed of two sets of fibres, one radiating and the other circular. The first mode I do not think at all satisfactory, and its advocates are far less numerous than those of the second. The motions of the iris are by far too rapid to be accounted for in this way, and no contrivance has ever been discovered by which its sudden injection with blood and the sudden withdrawal of the blood can be accomplished. The dilatation of the pupil, when the head and face are gorged with blood as in apoplexy, and the effects of injuries of the brain, and its contraction when these are relieved by blood-letting, I consider an insuperable objection to this theory. Brodie has frequently observed the dilated pupils to contract after the abstraction of blood in cases of compression of the brain, and to dilate again as soon as the immediate effect of blood-letting had ceased.

We will next consider the theory of the muscularity of the iris. The evidences in favour of this theory are much more satisfactory. The iris has been made to *contract* by the application of the galvanic stimulus,<sup>2</sup> and this we consider equivalent to a demonstration of the existence of a sphincter muscle. In further confirmation of this view, most of the best authorities admit a set of circular fibres, although it should be recollected that the proof of their mere existence is very different from that of their muscularity, which some have strangely confounded. Travers considers the iris a proper sphincter muscle,<sup>3</sup> and it is considered to possess such a muscle by all who admit its muscularity. We therefore consider the point settled, that the iris contracts by a sphincter muscle. The only point then remaining to be settled is, how the dilatation is produced. The advocates of the muscularity of the iris have generally considered that the dilatation must necessarily be produced by the same cause as that which produces contraction. It is true that many distinguished anatomists have admitted a set of radiating fibres, but we should be cautious how we attribute muscularity to any organ merely because it is fibrous. The cellular tissue may be drawn out into fibres, fasciæ: tendons, nerves, &c., are fibrous, but they are not therefore muscular. But besides having a fibrous structure the iris dilates: and these two circumstances, so far as they go, show that it possesses a set of radiating muscular fibres. Let us apply this theory to the phenomena. In amaurosis the pupil is permanently dilated. Now, can it be conceived that a muscle can remain for twenty, thirty, or forty years in a state of constant contraction? The idea is totally inadmissible. This disease is a paralysis of the nerve of vision, and in no way affects the nerves of the iris; we shall presently see why then the iris is at all affected in it. Belladonna and stramonium also cause dilatation of the pupil. This effect, when they are applied externally, is no doubt produced by their action being transmitted by those branches of the first branch of the fifth pair, which supply the conjunctiva and eyelids, to the ciliary branches of the same nerve. Do these substances, therefore, paralyse the circular fibres, without in the least degree affecting the radiating, and these latter then act constantly? I cannot conceive it at all probable that these powerful narcotics would thus distinguish between these muscles, when both (if they do exist) are supplied by the same nerves. I know this latter point also is contested, but there is no proof adduced of a different arrangement.

<sup>1</sup> Meckel, Cloquet.<sup>2</sup> Dunglison's Human Physiology.<sup>3</sup> Ibid.

It is merely an invention to explain a difficulty which can be much better explained in a different way. Besides, the theories of Magendie and Bellingeri, who contend for a different supply of nerves for each muscle, are directly opposed to each other as to which nerve goes to the contractor and which to the dilator. The iris has not been known to dilate from the galvanic stimulus. From all these circumstances we conclude that the idea of a dilator muscle in the iris is incompatible with some of its most important phenomena. Now, if we admit the radiating fibres to be elastic, we have an easy and satisfactory explanation of all the phenomena. In amaurosis the optic nerve no longer receives any impression, and none consequently is transmitted to the iris. The sphincter is therefore passive, and gives up the iris entirely to the power of the elastic fibres which dilate it. Expansion of the iris from belladonna is caused by a direct paralysis of the ciliary nerves, while the nerve of vision is not affected. A difficulty here presents itself, how the pupil is kept in a state of contraction for so many hours each day, if this be produced by a muscle. This difficulty, however, is readily explained. The sphincter is relieved from a state of constant contraction, 1st, by our passing through different shades of light causing slight contractions and dilatations; 2d, by winking, which we do involuntarily every few seconds. When the eyelids are closed the pupil dilates, and on opening them it instantly contracts. This is the principal mode of resting the sphincter, and shows that the action of winking possesses a highly important use, besides that usually ascribed to it. That this momentary rest is sufficient is proved by analogy. The wings of some birds and insects move several thousand times in a minute, and yet the intervals between the contractions are sufficient to rest the muscles. 3d. During sleep, this muscle, together with the rest of the whole muscular system, rests and renews its strength. The eminent anatomist, Dr. Wistar, taught the same doctrine as that which I have advocated, to which Dr. Physick made the following objections:—1st. That as elasticity is as much a property of dead as of living matter, after death we should always find the pupil dilated. 2d. In cases of concussion of the brain, where there is a sudden loss of sensibility and of muscular motion, the pupil should be invariably dilated; but the fact is that it remains just in the same state that it was at the time of the accident.<sup>1</sup> Now I think that Dr. Physick has been extremely unfortunate in the selection of his objections; for as to the first, one of the most commonly observed evidences of dissolution is expansion of the pupil; and as to the second, I do not think his remark well ascertained; at any rate it is not sufficient, for concussion of the brain does not necessarily affect either the optic or ciliary nerves, and in fact would not be likely to affect them; and on these nerves alone, I have already shown, the motions of the iris entirely depend. Besides, I will oppose to the last objection that dilatation of the pupil is a common symptom of *compression* of the brain, in which case there is a loss of sensibility in the optic nerve. To show, also, how independent the iris is of the rest of the muscular system, I introduce the remark of Brodie, that “after injuries of the brain the pupil sometimes remains permanently dilated, even after the general insensibility has passed off, and without loss of vision.” Now in this case there was evidently a loss of sensibility in the ciliary nerves, without any such loss in the optic.

The following experiments will, I think, prove incontestibly the theory here supported. If a fresh eye be cut through parallel to the iris, and a little way behind it, and the front half be immersed in water, the elasticity of the iris may be proved by stretching it toward the pupil, and it will be found to resist and to return to its former position immediately on being relieved from this state of tension. The second experiment is still more conclusive. It occurred to me that if the mechanism of the iris were such as I have been endeavouring to prove, I might weary the contractor muscle

<sup>1</sup> Horner's Special Anatomy, vol. ii., p. 412.

by preventing the eye from winking for a considerable time. Accordingly, having a bright lamp placed about a foot from my left eye, I kept the eyelids open with the thumb and forefinger of the left hand. Then holding a mirror a few inches from the eye, I closely watched the iris. In a few seconds there was a smarting sensation, attended by involuntary attempts to wink. Immediately the pupil expanded, and then quickly contracted. For two or three minutes alternate contractions and expansions took place incessantly, and then the pupil remained for a few seconds widely expanded, giving to the eye an amaurotic appearance. A partial contraction then took place, followed by an immediate expansion. In two or three seconds contraction again took place, closing the pupil about as much as at the commencement of the experiment. The contractions and expansions were again incessant for about a minute, when the experiment was concluded. I have repeated this experiment several times on my own eyes and others, and always with similar results.

I lately attended a child with convulsions, followed by a loss of action of the entire muscular system, which lasted for a considerable time. While the patient was in this state, the eyelids remained open, and I observed precisely similar phenomena to those above described.

Analogy also shows to us a similar contrivance in the heart and arteries, which are very liberally furnished with nerves from the ganglionic system; and in the chest, too, the elasticity of the cartilages which unite the ribs with the sternum, expands the chest after the intercostal muscles have ceased to act.

If, then, I have been successful in proving that the theory of the elastic and muscular structure of the iris is most consistent with the phenomena observed in that singular organ, we should adopt it; and when we meet with cases to which it is difficult to apply it we should set them aside for further investigation, by which perhaps they may be reconciled.

JAMES BOLTON.

## ART. II.—SUCCESSFUL DIVISION OF THE ADDUCTOR LONGUS FEMORIS MUSCLE, *for Deformity and consequent loss of motion in the Inferior Extremity.*

BY PAUL F. EVE, M. D.,

Professor of Surgery in the Medical College of Georgia.

[We have much pleasure in publishing the following article from the pen of an able southern surgeon. It was written for the Southern Medical and Surgical Journal, but will appear contemporaneously in this periodical.—Ed.]

In No. XI. of Vol. II., page 671, of this journal, (Southern Medical and Surgical,) the editor has been pleased to make the following remarks, concerning an operation, the result of which I now design presenting the profession,—“We are happy to have it in our power to remark, that a few days previous to that on which the Gazette Medicale came to hand, which contained the following case and operation of M. Lutens, a case of similar nature was presented for the inspection of the Professor of Surgery in the Medical College of Georgia, Dr. P. F. Eve, who at once decided on an operation for extirpating the diseased and disorganised muscle, and his patient is now under preparation for the operation. The muscle affected in this case is the adductor longus femoris, causing an inconvenient and distressing adduction of the left lower extremity. The particulars of this case we hope to afford our readers in a future number of this journal. Dr. Eve has not yet seen the March number of the Gazette Medicale.” The operation is then described as performed by M. Lutens, Surgeon to the hospital



at Antwerp, upon a sailor, for retraction of the leg, the notice of which in the French journal concludes by stating that a similar operation has subsequently been executed with success by M. Duval, of Paris.

It was in the latter part of last May (1838), that the patient upon whom I have just operated, called upon me. The editor of the Southern Medical and Surgical Journal has correctly stated, that I had not then seen a notice of the operation of M. Lutens. This case was published in one of the March numbers of the Gazette Medicale de Paris, which did not reach here until June, a few days after it had been decided in consultation, with Professors Antony and Newton, to operate on my patient. Dr. Newton, after our meeting, addressed me a note calling my attention to the number of the French journal just mentioned. This was the first intimation I had of the case of M. Lutens.

The two cases, however, differ materially. In that of M. Lutens as well as in the one of M. Duval, the Stromeyrean principle, (the division of a *tendon* to cure deformity and consequent loss of motion,) was simply acted upon; while in the case in which I operated, a *muscle* was divided. Again, they operated to remedy a defect of the leg; I for that of the thigh. Their operation was near the femero-tibial articulation; mine near the coxo-femoral.

The history of my patient previous to his application to me, is presented in the following letter,—“From infancy to fourteen years of age, I was strong, active, and remarkably healthy, and of good constitution. When fourteen, or about that period of life, I practised night-hunting to a great extent, and occasionally fishing; would sometimes lay on the wet ground, or remain on the banks of muddy creeks all night. In the month of February, 1829, I felt one evening, an aching in the left side of my shin-bone, and a sharp ketch on the inside of my thigh, with acute pain whenever I moved off a high step. At night the contraction in my thigh became very violent, and the pain extended from the groin to the knee. The first two or three weeks of the attack, the suffering was so excruciating that it rendered me almost senseless. At the expiration of this time the pain gradually moderated. I lay on my back with my legs drawn half up for four months, without my position being altered; after which I was able to be turned on my right side with a pillow between my knees. At the end of six months the pains entirely subsided, but left me drawn up as before described. I was now lifted out of bed, and gradually improving; I ventured to use crutches. The contraction was such that for a long time I could apply only one half of my left foot to the ground—it was about eighteen months before I walked at all without a stick.

“During the first year I was up, there came a small ulcer or sore, discharging bloody matter, just below the left buttock. I attributed it to my sitting so much.

“In the commencement of the attack, Dr. Alexander Jones, then of Lexington, Geo., was my physician. I have also applied a multiplicity of remedies to my thigh, but all to no purpose. I at length resolved to let nature take her course, and for the first five years I made considerable improvement, though it was always with great inconvenience, stiffness, soreness, and pain, that I took exercise. For the last three years, I have been pretty much upon a stand; if any thing, getting worse.

“It has now been more than eight years since this disease has been seated in my left hip or thigh, and I have not been able, for the time mentioned, to ride a horse half a day without great soreness and contraction of the limb affected, apparently shortened at times two or three inches. I have also not been able to walk half a mile without debility, and the least exercise would produce great suffering. I walk with my foot turned in, which increases more and more as I exercise.

(Signed) ALLAN A. BEALL.”

October 21, 1838.

On the 30th of May last, having procured a suitable place for my patient, I made a minute examination of his case. He had a considerable limp in walking, more especially when he commenced to walk, and invariably used a stick. He is a very muscular and robust man, aged 22. His left extremity was full one inch shorter than the other, nor when placed in the horizontal position, would traction reduce it much. Both the thigh and leg are much smaller than the right. The foot was turned inwards, and the whole limb inclined in this direction. The foot could not be carried out farther than about twelve inches from the median line of the body. There was a small depression and a round cicatrix near to the left ischium. In the internal and upper third of the thigh there was a *hard substance*, feeling like a hempen rope situated just under the skin. It was about four inches long by one and a half broad. However relaxed the thigh might be made, this diseased mass still presented the same resisting, insensible, cartilaginous hardness. It could be isolated from the surrounding tissues, all of which appeared to be normal. It was taken for a fibrous degeneration of the adductor longus femoris muscle. The shortening of the limb was attributed to the permanent disorganisation of this muscle, with the inclination of the pelvis from long habit. There was no symptom of disease in the hip-joint.

Before resorting to an operation, it was deemed prudent to place Mr. Beall upon a treatment, with the view of effecting some change, or of ascertaining something of the nature of his disease. This consisted chiefly in the use of warm bathing, heated vapour, and the most stimulating liniment, which were continued for about twenty days, without producing any appreciable benefit. Mr. B. then left for his home, in the interior of Georgia, to make his arrangements for the operation, which had at first been proposed to him.

He again called upon me early in October, and submitted to the operation the 9th of this month. Assisted by Professors Dugas and Newton, an incision was made, commencing at the pubis and cutting upon the internal edge of the affected muscle, and extending it about five inches, in a semi-lunar direction. The surface of the adductor longus was then exposed, and cautiously divided with the knife and a pair of scissors, about three inches below its origin from the pubis. The upper portion was found to be converted into a fibrous tissue, which slightly grated under the knife, but the portion below the section contracted, so as to separate the cut edges of the muscle about an inch. Its degeneration, therefore, did not extend throughout its whole length, but the muscular tissue appeared to be healthy an inch below where it was divided in its course to be inserted into the os femoris. We removed from the upper portion a small section for a pathological specimen. Two small arteries required a ligature. The wound in the skin was closed by adhesive plaster, and a compress and roller completed the dressing. The patient was put to bed, and a two pound weight attached the next morning to the left foot, and allowed to hang out of the bed-clothes over the back of a chair, so as to make traction in a horizontal direction.

There was no material alteration in the length of the limb until the next day, when it commenced gradually elongating, so that when dressed on the fourth day after the operation, the difference between the two lower extremities did not exceed a quarter of an inch. At the end of a week, even this difference had disappeared, and Mr. Beall commenced using the limb. His friends, Dr. Wm. Butts, of Warrenton, and Dr. Joel Branham, of Eatonton, visited him during the second week of his confinement, and did not remark any difference in the length of the two extremities. On the fifteenth day after the operation, my patient was out in the streets walking about, with scarcely any impediment; and on the 28th of October, the nineteenth day since the division of the muscle, he returned home on the Georgia railroad.

The left inferior extremity has not only been restored to its original length, but all its motions have been so far regained that the patient, before his departure from the city, could turn the foot and carry the leg and thigh

outward to nearly the same extent, and with almost as much freedom, as on the sound side; he was daily improving in these respects, and is in a fair way of realising from the operation all the benefits that had been proposed.

Supposing the disease for which the operation was performed in this case to have been the result of acute rheumatism, may not similar cases be relieved by *surgical*, in addition to medicinal treatment?

### ART. III.—PHILADELPHIA HOSPITAL (BLOCKLEY).

DR. DUNGLISON, ATTENDING PHYSICIAN.

*Case of Effusion of Serum between the walls of the Abdomen and the Peritoneum (from an injury); complicated with Pleuritis and Enteritis.*  
Reported by A. M. VEDDER, A. M., of Schenectady, New York, Senior Resident Physician.

Thomas McGraw, ætat. 66, entered Medical Ward, No. 3, July 3d, 1838. Is a native of Ireland, and has been in America forty-four years. Is a tanner by trade; of very intemperate habits.

During the last winter has had some difficulty in urinating; was obliged to exert himself for several minutes before the urine would flow.

He entered the Surgical Ward on the 1st of June, for an injury received in falling from a fence. It cannot be ascertained whether he complained of pain in his abdomen at that time or not. Says, however, that he had pain there six weeks since. Diarrhœa began on the 1st of July.

At his entrance complained of pain in the left side of the abdomen, and in the chest of the same side. Was short of breath also. The left side of abdomen was then somewhat swollen and tense; and the cellular tissue covering that part was infiltrated—pitting on pressure.

On the 3d, he took castor oil and laudanum, and was cupped over the painful part; the cupping being followed by a hop poultice.

On the 7th, the diarrhœa having increased, he took hydrarg. chlorid. mit. gr. i., and pulv. ipecac. et opii, gr. ii., four times daily. The affected part gradually becoming more prominent and tense, but the external infiltration ceasing. The diarrhœa now became worse; six to eight stools daily. Strength diminishing; the difficulty in urinating continuing.

His condition on the 12th of July was as follows:—Intellect dull; frame muscular, somewhat emaciated; decubitus inclined to the left side, with the thighs partly flexed on the abdomen; complains of debility; face slightly flushed; expression anxious; moans at times; no appetite; thirst; cough slight; tongue tremulous, covered with a brown coat in the middle, and whitish at the edges, rather dry; no vomiting; respiration high; right side of chest moves more than the left; pulse 96, full and soft; skin cool and soft; complains of pain in the abdomen; has had eight or ten stools in twenty-four hours (took an ounce of castor oil last evening); passes his stools in bed; sleeps badly, and is delirious at times; general tenderness of abdomen, especially at the left of the umbilicus; left side full and prominent, tense and resisting; percussion flat from the ileum to the nipple throughout this side, commencing one inch to the left of the median line; fluctuation decided throughout this portion.

Chest.—Percussion flat at the inferior third of the left side posteriorly, then dull, and becoming more resonant as we ascend; respiration very feebly heard at the inferior third—at the middle third less loud than on the corresponding portion of opposite side; ægophony here doubtful; percussion on the right side resonant throughout, both anteriorly and posteriorly; respiration normal; percussion, anteriorly, on the right, resonant to the fourth rib, flat below (sitting).

The prescription of the 7th was continued, and he was ordered the following pills:—R. Hydrarg. chlorid. mit. gr. i.; p. ipecac. et opii, gr. ii.; ut fiat pilula quater in die sumenda. Good diet, and a small bottle of porter. Hop poultice to the side.

On the next day there was wildness of expression; moaning at times. He was delirious on the 12th and during the night; slept very little; decubitus as before; strength diminished; anorexia; thirst increased; cough slight. Vomited last evening after taking his porter. Stools became more frequent at 4 p. m.; seventeen stools in twenty-four hours, of a light green colour—no blood, but slime in “strings.” Discharges fetid. Urine, about a pint in the twenty-four hours; red, with white flocculi floating in it resembling gruel, amounting to half a gill in the pint. Abdominal tumour rounded and more prominent, also more tense and painful; fluctuation very evident; flatness on percussion now extends beyond the median line; respiration high, 30; tongue coated, moist; pulse 84, more feeble; skin cool; no redness of tumour, the temperature of this side higher than the other.

Still passes his stools in bed.

He was ordered six ounces of wine, to be made into whey; beef essence, and a poultice to the side.

In the evening he was more feeble and short breathed. Abdominal swelling more developed; at its upper part, near the scrobiculus cordis, it extends an inch and a half beyond the median line, and is here apparently more soft than elsewhere. No chill; delirious at times; sleeps badly; one stool since last note; pulse small, 90 per minute; skin cool; moaning.

Omittantur pilulæ.

The whey and essence were directed to be continued. He will not suffer the poultice to remain on his side.

July 15th.—Expression more anxious; respiration more laboured, 36; slept very little, delirium continues; two stools last night; tongue dry and chapped; thirst; pulse 78, small; no œdema of legs; tumour as before.

Continuentur remedia.

In the afternoon preceding his death, his expression was haggard; moaning constant; rattling in the throat; tongue dry, lies with his mouth open; respiration performed almost entirely by the right side, laboured and high, 42; pulse 90, more feeble; tumour more prominent; percussion flat to the median line, and painful. Lies partly on the left side, with his legs drawn up; delirium continues; one thin stool; no chill; has vomited two or three times; urine of about the same quantity and character as described in a previous note—it does not coagulate by the addition of nitric acid. Complains of pain in abdomen.

Died July 16th, at 11 o'clock, p. m.

*Necropsy twelve hours after death.*—Exterior: Large skeleton; moderately emaciated. Left side of abdomen distended; more prominent at the lower portion.

Fluctuation very evident.

On making a puncture about midway between the short ribs and the crest of the ilium, there flows out a thin reddish fluid, without odour—about two gallons. On opening the abdomen the fluid is found to have been contained in a cyst between the parietes of the abdomen and the peritoneum lining it. The cyst does not communicate with the cavity of the peritoneum. The intestines, except the descending colon, are thrust into the right side of the abdomen; the left kidney is found lying on the vertebra. The peritoneum involved is thickened and injected. Within the cyst, the peritoneum, in spots, is covered with shreds of lymph; the cyst is found to extend from the cavity of the pelvis to the diaphragm. There are also numerous large coagula of blood mixed with a purulent matter. That part of the cyst formed by the parietes of the abdomen is in part smooth. No fracture of the ribs or other mark of external injury can be discovered.

Small Intestines.—Contain a greenish fluid. The superior portion, for



the distance of two feet, is tinged with bile. In the inferior portion there are patches, some of them six inches in length, which present a vascular injection of the minute vessels. No ulcerations. Mucous membrane rather soft.

Large Intestines.—Are healthy.

Bladder.—Is distended with urine, containing flocculi resembling gruel; its coats are thickened, and its fibrous bands larger than usual within the bladder. At the mouth of the urethra is a hard lobated body, partially divided into three portions; a right, left, and inferior lobe, of nearly equal size, each as large as a small chestnut; they are of the colour of the internal coat of the organ (white). The prostate is larger than usual.

Chest.—Left lung presents some old adhesions. It is contracted, corrugated, and covered with newly formed lymph, and about one half as large as the right lung. This side of the chest contains about a pint and a half of straw-coloured serum, with a few flakes of lymph floating in it. The pleura costalis is finely injected. The lung is gorged with a red spumous serum, which runs out copiously from the cut surface; the tissue is soft and easily broken down.

Right Lung.—The tissue presents the same characters as the left.

Heart.—Rather larger than the average size, and spleen very soft.

A. M. VEDDER.

#### ART. IV.—GRANVILLE ON COUNTER-IRRITATION.

On the cover of the last number of the "Intelligencer" was the following notice by the editor.

"In answer to our correspondents who have enquired of us respecting the precise formulæ employed by Dr. Granville to excite counter-irritation, we must express equal ignorance with themselves. It is much to be regretted for the sake of Dr. Granville's professional reputation, that there is so much evidence of empirical concealment in his work. He has occupied a conspicuous station amongst his professional countrymen, which cannot but be materially injured by the course he is now pursuing.

"Persuaded from our own observation of the eminent advantages to be derived from counter-irritation, even when employed singly, and being on the point of estimating the subject numerically, at the moment when we received his volume, we deemed it well to promulgate the principle enforced by him, notwithstanding the precise mode of carrying it into effect was not mentioned.

"We are convinced, both from observation and reflection, that it is not important for the formulæ to consist of any particular proportion of the excitant ingredients, provided only that they are adequate to the production of the requisite amount of local irritation."

Since these remarks were written, the London Lancet, for October, has arrived, containing a letter from Dr. Granville, educed by the strictures of his brethren in England, on his unprofessional concealment of his preparations. He states that he addressed his work to the public to impress all with the value of the agent, but that it would not have been wise to give precise formulæ to them who could not estimate the proper proportions of the ingredients: that every physician can apportion them; that he had never concealed the formulæ from his friends, and always intended to give them to the world.

The following are the formulæ of his "antidynous" preparations—as he

calls them—which all will admit he should have given before. We will take an early opportunity of presenting them, so that they may be appended to the work as printed in the "Library."

Each kind of lotion consists of three ingredients:—

1st. *The strongest liquor of ammonia*, A.

2d. *Distilled spirit of rosemary*, B.

3d. *Spirit of camphor*, C.

#### PRELIMINARY STEPS.

##### A.

Saturate a given quantity of distilled water, contained in a glass receiver surrounded by ice, with ammoniacal gas, obtained in the usual way from a mixture of equal parts of hydrochlorate of ammonia and recently slaked lime, both reduced to a fine powder. The water may be made to take up nearly 800 times its bulk of ammoniated gas under the circumstances described; its specific gravity will then be about 872, and 100 parts of it will contain thirty-three parts of real ammonia, according to Sir H. Davy's tables. This solution of ammonia will, therefore, be more than three times the strength of the *liquor ammonia* of the Pharmacopœia of London, 100 parts of which, at a specific gravity of 960, contains only ten parts of real ammonia. I have, therefore, called mine "*liquor ammonia fortissimus*."

##### B.

Take two pounds of the tips or small leaves of fresh rosemary, and eight pints of alcohol; leave the whole in infusion for twenty-four hours in a well covered vessel, and after adding a sufficient quantity of water as will just prevent the empyreumatic smell, distil over seven pints. The Pharmacopœia of London directs the essential oil of rosemary to be distilled instead with rectified spirit. Such a preparation I found unsuited for my purpose.

##### C.

To four ounces of pure camphor add two pints of alcohol, so as to dissolve the camphor, which solution should be filtered. The present *tincture of camphor* of the Pharmacopœia of London, contains one ounce more of that substance, and does not harmonise so well with my two other ingredients as the weaker preparation.

The three ingredients, thus prepared, every medical man should keep always ready at hand, in well-stoppered glass bottles, so as to be able to make, extemporaneously, a counter-irritating lotion of any requisite strength, according to the nature of the case requiring that application on extraordinary occasions. But for the ordinary purposes detailed in my work, it will be better to keep both a milder and a stronger ammoniated lotion ready prepared for use.

#### *The milder Ammoniated Lotion.*

Assuming the quantity of lotion desired to be divided into eight parts, then the proportions of the ingredients will stand thus:

A—four eighths,

B—three eighths,

C—one eighth.

#### *The stronger Ammoniated Lotion.*

If the quantity desired be also divided into eight parts, then the proportions of the ingredients run as follow:—

A—five eighths,

B—two eighths,

C—one eighth.

Although the changes of proportion here may be deemed trifling, yet the strength of the lotion is such, that I never employ it, except in cases of apoplexy, and for the purpose of cauterisation.

*Directions in mixing the Ingredients.*

A and B are gradually mixed together. The mixture becomes opalescent and somewhat turbid, and a peculiar, highly agreeable, ethereal smell is given out, different from the individual odour of either ingredient, although the extreme pungency of the ammonia be still discernible. I have strong reasons to believe that, at this point of the operation, some particular change takes place, which imparts to the mixture of the two ingredients some of its valuable peculiarities as a counter-irritant described in my work; but what that change is, it is not my business to enter upon in this place: suffice it to say, that in a great number of experiments made with the ingredients separately, (for each of them acts as a counter-irritant on the skin,) and with them combined, the effects were uniformly different; those in the former case being found unequal to the production of those complete results which I trust I have justly promised to the profession. Ammonia alone (however strong) will not give rise to the effects I have described, though it has often stopped internal pain, and produced *small little blisters*; but never has it succeeded in almost immediately producing a full vesication, as I have seldom failed to produce with the two ingredients mixed together, particularly after the third ingredient has been added.

Before, however, that third ingredient is so added, it is desirable to clear the previous mixture, by the addition of a small quantity of alcohol, and to set the whole in a cool place. All the various precautions here mentioned may, upon an emergency, be dispensed with, when an immediate action is required, either to arrest pain or relieve deep-seated inflammation. But for the more delicate uses, particularly for instantaneous vesication, the preparations should be obtained in the manner I have specified.

The lotion must always be kept in bottles with a glass stopper; and their whole virtue depends on the accurate distillation and preparation of the ingredients, as well as on the careful admixture of the latter. The species of ethereal principle formed during the admixture, remains present in the lotion, but it is apt to vanish if the bottle be frequently opened, and then much of the peculiar effect of the counter-irritation is impaired. It is one of the many recommendations of these powerful preparations, that their effluvia, besides being agreeable, are of precisely that nature which is most likely to revive and benefit the patients labouring under diseases that require the application of counter-irritants. The compound camphor liniment is the only known combination of ingredients nearly similar to the ammoniated lotion just described. But the profession is well aware that the liniment will not produce, and never has produced, the effects I have predicated.

Among those effects, one of the most surprising is that of giving rise, in a space of time varying only between three and ten minutes, and in almost every instance, (if such a result be the desired object,) to as ample and full a vesication as can be expected in as many hours from the best Spanish flies. This is a result which I am not aware has been obtained before in so short a time, except by boiling water, (a remedy not quite so pleasant as the odour of ammonia); and on it, therefore, as well as upon its importance in the treatment of many serious disorders, I do take my stand, as also upon that of arresting nervous and muscular pain, almost immediately, provided it does not depend on structural disease.<sup>1</sup>

<sup>1</sup> Medical Examiner, Nov. 21.

# ART. V.—TREATMENT OF ELEPHANTIASIS BY THE BITE OF THE COBRA. DEATH IN TWENTY-FOUR HOURS.

[For the particulars of the following case we are indebted to our friend, Dr. Joshua J. Cohen, of Baltimore, who has kindly furnished us with the *Jornal do Commercio*, of the 6th and 11th of September, 1838, which contain it. The disease of elephantiasis is sufficiently loathsome, but it is strange that any one would subject himself to so dangerous a measure for its removal. We have but little doubt, that the powerful change effected in the sanguiferous system—in the whole system of nutrition indeed—by the morbid poison in question, might have been salutary, provided a fatal influence had not been excited. In all inveterate cutaneous affections, our endeavour is to modify the circulating fluid—where we administer internal remedies—so that it may exert a new influence on the whole function of nutrition; and what more powerful agent than that which is capable of being exerted by the poison in question, provided limits could be placed to its operation; which is of course impracticable.

Dr. Cohen remarks, that the experiment has been made before; and that there is a tradition current in Cumana, where elephantiasis prevails in all its horrors, of a father, whose son was thus afflicted, obtaining a gourd, into which he placed a rattlesnake; and, calling his son, told him to put his hand into the gourd and he would be cured. The son did so; was bitten, and died. It is said that the father took this method of causing the death of his son. It is more probable that it was embraced under an old idea, that the disease would be removed thereby.—*Ed.*]

A man, 30 years of age, of ordinary stature, athletic form, and sanguineobilious temperament, had been affected six years with that species of elephantiasis, termed by Alibert *leontina*. The whole body, especially the extremities, was externally insensible; the skin was thick, hardened, wrinkled on its surface, and covered with tuberculous elevations, without ulceration; some pustules existed under the arm, which presented the aspect of itch, and indicated a complication with that disease. The character of the disease was most apparent and best marked in the face. In the extremities the epidermis and the nails had begun to change, and the fingers to curl up and alter their form. The mind remained unimpaired, and exhibited rather unusual activity and energy. But so dreadful had been his sufferings, and so small the prospect of relief, that the patient was willing to submit to any treatment and encounter any hazard, by which a chance of cure could be afforded. In this state of mind it was proposed to him by Dr. Santor to expose himself to the bite of the venomous cobra, with the faint hope that the introduction of a second poison into the system would serve to expel the existing morbid affection. He consented; the proper arrangements were made, and on the 4th of September, a little before noon, he received a bite between the root of the little and ring finger. The wound bled moderately, but was not painful till about fifteen minutes had elapsed. The symptoms of absorbed virus then went on to exhibit themselves in regular progression, but less rapidly than is usual in a healthy subject. At the end of an hour the whole hand was swollen, and the pain had extended to two thirds of the forearm. At 1½ p. m., chill; somnolence; constriction in throat; pain in tongue and fauces. At 2½, difficulty in swallowing and utterance; anxiety; sweat; epistaxis. At 3½, depression; flushed countenance; discharge of blood from pustule in axilla. At 4, general redness of surface, tending to livid, in bitten part; heat of surface; salivation. At 7,



sleep disturbed by groans. On waking, severe pain in chest; saliva viscid; discharge of a bloody fluid from the nostrils; deglutition suspended. At 9, sleep. At 10, some liquid swallowed; the tuberculous elevations in the arms and face were observed to be depressed; pain in chest less; deglutition free. At 12, disturbed sleep; painful cries; sense of heat in legs. From this time to 9 A. M., frequent swallowing of liquid and discharge of urine. The cries and expressions of pain continued. At 9, great prostration; convulsive movements of the jaw and inferior extremities; bloody urine. At 10, intermittent pulse; increase of convulsive movements; redness of surface less; respiration anxious. At 11 the convulsions ceased. Death at 11½. The body soon became excessively swollen, livid, and offensive, and no examination was attempted.

## BIBLIOGRAPHICAL NOTICES.

*Roe on Hooping-Cough.*<sup>1</sup>

The great object of this work is to recommend the hydrocyanic acid, a trial of which, upon several children suffering from hooping-cough, "was attended with such striking effects, that Dr. Roe could not entertain a doubt that this medicine possessed a *specific power* [?] over hooping-cough," p. viii. The result of all his trials convinced him, "that in warm weather it will cure almost any case of simple hooping-cough in a short time; that in all seasons it will abridge its duration; and in almost every instance, where it does not cure, that it will, at least, materially relieve the severity of the cough." p. x.

The remedy is not new as applied to this affection, and so Dr. Roe admits; but certainly no one has brought it forward with such panegyrics as he. It is proper to observe, however, that he never gives it alone. It is always combined with other agents, which have been recommended in the disease. The following are two of his formulæ:—

"1. For a delicate boy—four years old.

R. Acidi hydrocyanici (Scheele's)	℥ xii.
Liquoris antimonii tartarizati,	3 i.
Tincturæ opii camphoratæ,	3 iiss.
Misturæ camphoræ,	3 viiss. M.

Fiat mistura. Capiat cochlearium magnum quarta quæque horâ. To be given in some warm drink. The child to remain in a warm room, and to live upon light pudding and broth."—p. 96.

"2. For a healthy looking female child, five years of age.

R. Acidi hydrocyanici (Scheele's)	℥ xx.
Liquoris antimonii tartarizati,	3 iss.
Vini ipecacuanhæ,	3 iss.
Aquæ,	3 xiii. M.

Fiat mistura. Capiat cochlearium parvum secundâ quæque horâ."—p. 104.

<sup>1</sup> A Treatise on the Nature and Treatment of Hooping-Cough, and its complications, illustrated by cases; with an Appendix, containing hints on the management of children, with a view to render them less susceptible of this and other diseases of childhood, in an aggravated form. By Geo. Hamilton Roe, M. D., Oxon. Fellow of the Royal College of Physicians, and Physician to the Westminster Hospital. (With a motto). 8vo, pp. 258. London, 1838.

It need scarcely be said, that it is not easy to deduce satisfactory inferences as to the action of any one ingredient of a compound formula,—every article of which, it is presumable, has been added to effect some definite object.

The appendix "on the general management of children" strikes us as irrelevant, and has doubtless been added for his lay readers, for whom, as well as for the profession, the book was avowedly written.

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*Burdach's Physiology, Vol. 2.<sup>1</sup>*

The volumes of this admirable collection of physiological facts being on detached subjects, some of which are more pregnant with interest than others, have not all passed to a second edition at the same time. The volume before us is entirely occupied with the ovum, and intra-uterine existence, and necessarily, from its dimensions, contains almost all that has been said upon the subject.

Burdach's work has been recently translated by Jourdan, but the translation is of course wanting in all the additional matter contained in the *Auflage* before us. It ought to be in the library of every physiologist.

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*Pilcher on the Ear.<sup>2</sup>*

This work, from a respectable source, is divided into three parts. PART I. Embracing general observations, the Anatomy of the Ear, and the Physiology of Hearing. PART II. The Abnormal Condition of the Ear (including malformations and deaf-dumbness). And PART III. The Diseases of the Ear.

It is illustrated—not beautified—by several lithographic sketches of anatomy, diseases, and apparatus.

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*Carpenter's Principles of General and Comparative Physiology.*

We have been favoured by the author, Dr. William B. Carpenter, of Bristol, England—whose oration, delivered before the members of the Royal Medical Society of Edinburgh, we had occasion to notice in our last volume (page 251)—with the first three hundred and thirty-six pages of a new work on the principles of general and comparative physiology. The work will consist of four hundred and eighty or five hundred pages, and be illustrated by about two hundred and twenty figures on copper and wood. It is designed as an introduction to the study of human physiology, and seems to us to be well adapted for the purpose. It is divided into two books, the *first* embracing general physiology; the *second* special and comparative physiology, preceded by copious introductory observations on organised structures in general. When we have received the remainder of the work

<sup>1</sup> *Die Physiologie des Erfahrungswissenschaft. Zweiter Band. Bearbeitet von Karl Frederick Burdach. Mit Beiträgen von Karl Ernst von Baer, Heinrich Rathke und Ernst H. F. Meyer. Zweite berichtigte und vermehrte Auflage, mit Beiträgen von Heinrich Rathke, Karl Theodor von Siebold und G. Valentin. Mit vier Kupfertafeln. 8vo, s. 845. Leipz., 1837.*

<sup>2</sup> *A Treatise on the Structure, Economy, and Diseases of the Ear; being the Essay for which the Fothergillian gold medal was awarded by the Medical Society of London. By George Pilcher, Lecturer on Anatomy and Surgery at the Theatre of Anatomy and Medicine, Webb street, Borough; and Senior Surgeon to the Surrey Dispensary. 8vo, pp. 324. London, 1838.*

we shall refer to it again. In the mean time we bespeak for it the physiological reader's favourable anticipations.

Dr. Carpenter is the author of several valuable physiological articles in the British and Foreign Medical Review, amongst which may be specified—one on the study of physiology as an inductive science, and another on the functions of the nervous system; both contained in recent numbers of that valuable periodical.

#### *Bristol Ophthalmic Dispensary.<sup>1</sup>*

This institution, which is under the surgical direction of Mr. Estlin, referred to in the next paragraph, appears to be in a flourishing condition, one thousand eight hundred and twenty-three patients having been admitted from January the 1st to December the 31st, 1837. The expenses appear to us small; the whole charge for rent of rooms, medicines, leeches, occasional lodging and boarding of patients, while under operations, &c., having amounted to £74 5s.—equal to about \$330 of our money.

*Vaccine Matter, ten removes from the Cow.*—We have been favoured by Mr. Estlin, and by Dr. W. B. Carpenter, of Bristol, England, with some vaccine matter, which was brought over by the Great Western. It would seem that the same confidence in the effects of vaccination is not entertained in England by many as formerly, and that a recent epidemic has affected many persons seriously, and even fatally, who had been deemed secure.

Mr. Estlin, having succeeded in procuring matter from the cow, has philanthropically forwarded a few points to us, and a few more have been sent to us by Dr. Carpenter. The vesicles, produced by this matter, are said to remind those who had an opportunity of seeing the Jennerian vesicles—when first produced on the introduction of vaccination—of the latter. It is but recently that we have received the virus, but already it has been inserted into the arms of a few children. The results we shall give hereafter, and should they be successful, an opportunity will be afforded for a fresh fount, which may supply the greater part of the United States,

The following is the pedigree of the virus, according to Mr. Estlin:—

1. The cow, discovered about Aug. 11, 1838.
2. Miss A., infected by milking.
3. Jane, inoculated from Miss A., Aug. 11, at the farm near Berkeley.
4. Stitt, vaccinated in Bristol, Aug. 23.
5. Stiff, Sept. 1.
6. W. Norris, " 12.
7. Frankham, " 19.
8. W. Webb, " 25.
9. W. H. Holden, Oct. 3.
10. — Hatton, " 10.
11. Geo. Chalk, " 17.

From him the lymph we have received was taken on the 8th day—October 24th, 1838.

In the course of a fortnight, Dr. Bridges, of this city, will be enabled to supply this new lymph to applicants.

<sup>1</sup> Twenty-fifth Annual Report of the Dispensary for the cure of Complaints of the Eyes, Frogmere street, Bristol, established in 1822. pp. 4.

*Charity Hospital, New Orleans.*—We have been favoured by Dr. E. H. Barton, administrator of this extensive institution, with a "list of admissions into the hospital from the 1st of January, 1830, to the 1st day of July, 1838." The total number of foreigners received in the half year of 1838 was 1077, of citizens of the United States, 628.

Prefixed to the report is a letter to the governors of the different states asking aid of the legislatures to whose citizens the institution has afforded assistance, to enable the benefits of the charity to be extended.

*University of the City of New York. Dr. G. S. Bedford.*—We are pleased to see that this gentleman, who is a practised teacher, has been appointed to the Chair of Obstetrics in this new institution.

*Treatment of Tinea in Children at the Hôpital des Enfants at Paris.* By JADELOT.<sup>1</sup>—If the vesicular or pustular eruption of the head still retains an acute character, cataplasms of mustard or starch flour are ordered, together with a wash of inf. alth., or bran-water and frequent baths. When this period is over, or if the disease is already chronic when the child is admitted into the hospital, the crusts are first removed by poultices, and then the hair shaved off, which last process must be repeated twice every week during the treatment. The head is then washed twice daily with a lotion composed of a pint of water and a dram of sulphuret. potass. After each washing there is applied, but only to the diseased parts, a very thin layer of Jadelot's liniment, which is composed of two drams of common soap, three of sulphuret of potass, four ounces of poppy oil, and one scruple of volatile oil of thyme. The soap is dissolved in water, the sulphuret in the oil; the two solutions are mixed, and the volatile oil added. If the children are also suffering with any other skin affection, sulphur baths must be employed, or the other affected parts must be washed with the bran-water above mentioned.

#### BOOKS RECEIVED.

*From Dr. Oppenheim, of Hamburg.*—Die Heilung der Hydrocele durch Einspritzungen von Iod-Tinctur in die Scheidenhaut von Dr. F. W. Oppenheim. Aus Fricke's und Oppenheim's Zeitschrift f. d. gesammte Medicin. Band 8, Heft 4. 8vo. s. 17.

Die extirpation des Schenkelkopes aus der Gelenkhöhle, von Oppenheim. 8vo, s. 178.

Observations Physiologiques et Chirurgicales faites sur les cholériques, par J. F. Dieffenbach, &c. &c. 8vo, pp. 16. Berlin, 1835.

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*From the Author.*—Oration delivered before the Members of the Royal Medical Society of Edinburgh, at the celebration of their Centenary, Feb. 17, 1837. By William B. Carpenter, Senior President of the Society, &c. 8vo, pp. 36. Edinb., 1837.

*From J. B. Estlin, Esq., F. R. S., Surgeon to the Institution.*—Twenty-fifth Annual Report of the Dispensary for the Cure of Complaints in the Eyes, Frogmore street, Bristol.

*From Professor Green.*—The Medical Missionary Society in China. Address, with minutes of proceedings. 8vo, pp. 30. Canton, 1838.

<sup>1</sup> Bull. de Ther. T. xii., livr. 6.